

Chirantan Pramanik

Postdoctoral researcher (2021 - Present)
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EDUCATION:

- **Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science (IISc), Bangalore, India**
Ph.D. Research Scholar (2012-2021)
- **I.G.C.A.R. Kalpakkam, B.A.R.C. Training School, Mumbai, India**
Post Graduate in Materials Science, 2010-2012
- **Indian Institute of Technology (IIT), Kharagpur, India**
M.Sc. in Physics, 2008-2010
- **University of Calcutta, Kolkata, India**
B.Sc. honours in Physics (with Mathematics and Chemistry), 2005-2008
- **West Bengal Council of Higher Secondary Education, W.B., India**
Higher Secondary Examination in Science stream, 2003-2005
- **West Bengal Board of Secondary Education, W.B., India**
Secondary Examination, 2001-2003

GRANTS & FELLOWSHIPS:

- Feinberg Graduate School Postdoctoral research fellowship (Weizmann Institute of Science, Israel), 2021
- CSIR-UGC NET SRF (Ph.D. fellowship) in Physical Sciences, 2014
- CSIR-UGC NET JRF (Ph.D. fellowship) in Physical Sciences, 2012
- GATE (Graduate Aptitude Test in Engineering) Physics, 2011
- CSIR-UGC NET Lectureship in Physical Sciences, 2010
- MCM IIT Kharagpur, 2010
- JEST (Joint Entrance Screening Test for M.Sc. & Ph.D.) Physics, 2008, 2009 & 2010
- JAM (Joint Admission Test for M.Sc. in IIT) Physics, 2008
- National Graduate Physics Examination (NGPE), 2008
- National Merit Scholarship, 2005

TEACHING ASSISTANTSHIP:

AS212: Introduction to Atmospheric Dynamics, (for Master's and Ph.D. students)
Course Instructor: Prof. Jai Sukhatme, CAOS, IISc, Bangalore.

TECHNICAL SKILLS:

- **Ab initio quantum chemical packages:** Gaussian, Quantum ESPRESSO
- **Scripts:** Python, Matlab
- **Tools:** L^AT_EX, GaussView, Avogadro, BURAI, XCrySDen, VESTA, Origin, ImageJ

RESEARCH INTEREST:

First-principle calculations in geochemistry and mineralogy, Stable and clumped isotope geochemistry, Equilibrium and kinetic isotope fractionation, Mineral precipitation and trace element partitioning, Mineral–water fractionations, Diagenesis.

RESEARCH EXPERIENCE:

- **Density Functional Theory Studies on Stable Isotope Fractionation in Carbonate–Water Systems in the Presence of Impurities** (Postdoctoral work in Weizmann Institute of Science, Israel)
(Host: Prof. Itay Halevy, June 2021 - present)

- **Ab initio Quantum Chemical Studies on Kinetic Fractionation during the analysis of Carbonates for the Clumped Isotope Thermometry** (Ph.D. Thesis in IISc Bangalore, India)
(Supervisor: Prof. Prosenjit Ghosh , July'2012 - April'2021)
- **Abrasive wear of radiated PVDF coating.** (B.A.R.C. Training school project in I.G.C.A.R. Kalpakkam, India)
(Supervisor: Dr. C Mallika & Dr. F Lawrence , July'2011 - June'2012)
- **Temporal evaluation of soap bubble size distribution in a closed chamber; an experimental study with theoretical modeling.** (Master's Thesis in IIT Kharagpur, India)
(Supervisor: Prof. Anushree Roy , July'2009 - May'2010)

PROFESSIONAL EXPERIENCE:

- Member of the Copyediting Team at Advances in Geochemistry and Cosmochemistry (August'2025 – March'2026)
- Reviewer at Physical Chemistry Chemical Physics (PCCP), The Royal Society of Chemistry (Since December'2025)

INTERNATIONAL CONFERENCES:

- **Ab initio study of oxygen isotope fractionation during CO₂ production from calcium carbonate and phosphoric acid reaction**, Goldschmidt 2017, Paris; Chirantan Pramanik, Prosenjit Ghosh (2017).
- **Ab initio study of clumped isotopic fractionation during acid digestion of dolomite (CaMg(CO₃)₂)**, Goldschmidt 2020, Honolulu; Chirantan Pramanik, Sanchita Banerjee, Prosenjit Ghosh (2020).
- **Study of isotope exchange in molecular gases in electric field**, AGU 2020, (Webinar); Chirantan Pramanik, Ruby Saha, Swastika Chatterjee, Prosenjit Ghosh (2020).
- **Ab initio calculations of the isotopic effects of sulfate and Mg impurities in carbonate minerals**, EGU General Assembly Conference Abstracts, EGU22-2569; Chirantan Pramanik and Itay Halevy (2022).
- **An ab initio study of sulfate and magnesium impurities in CaCO₃ and their effects on mineral-solution equilibrium isotope fractionations**, Goldschmidt 2023 (Session 13aP1); Chirantan Pramanik and Itay Halevy (2023).
- **First-principle study of Ca, O and C isotope fractionation between CaCO₃ and aqueous solutions in the presence of magnesium and sulfate impurities**, Goldschmidt 2025 (Session 12cP1); Chirantan Pramanik and Itay Halevy (2025).

PEER-REVIEWED PUBLICATIONS:

- 'Isotopic fractionation during acid digestion of calcite: a combined *ab initio* quantum chemical simulation and experimental study', Chirantan Pramanik, Swastika Chatterjee, Benjamin R. Fosu, Prosenjit Ghosh. Rapid Communications in Mass Spectrometry. 2020;34(13):e8790: . <https://doi.org/10.1002/rcm.8790>.
- 'Ab initio quantum chemical studies of isotopic fractionation during acid digestion reaction of dolomite for clumped isotope application', Chirantan Pramanik, Prosenjit Ghosh, Sanchita Banerjee, Mao-Chang Liang. Rapid Communications in Mass Spectrometry. 2020;34(23):e8926. <https://doi.org/10.1002/rcm.8926>.
- 'Fractionation of stable oxygen and clumped isotope during acid digestion of calcite in the presence of an external DC electric field', Sanchita Banerjee, Prosenjit Ghosh, Chirantan Pramanik, Subba Reddy B. Rapid Communications in Mass Spectrometry. 2020;34(22):e8921. <https://doi.org/10.1002/rcm.8921>.
- 'Lithium isotopic fractionation in olivine crystal in presence of iron at variable temperatures: A first-principles study', Rabindranath Mondal, Chirantan Pramanik, Swastika Chatterjee, Prosenjit Ghosh, Tanusri Saha-Dasgupta. Geochimica et Cosmochimica Acta. 2025; Volume 391, Pages 144-157. <https://doi.org/10.1016/j.gca.2024.12.023>.
- 'First-principle study of mineral-solution equilibrium isotope fractionations of magnesium, sulfate and calcium in CaCO₃', Chirantan Pramanik and Itay Halevy. In review, *Geochimica et Cosmochimica Acta*.
- 'The effects of magnesium and sulfate impurities on the fractionation of carbon and oxygen isotopes between CaCO₃ minerals and aqueous solution: A DFT study', Chirantan Pramanik and Itay Halevy. To be submitted in *Geochimica et Cosmochimica Acta*.
- 'Study of carbonate clumped isotope reordering using density functional theory and Monte Carlo simulations', Chirantan Pramanik and Itay Halevy. Manuscript in preparation.